**Legionnaires' Disease: Questions and Answers**

**Background**

Legionnaires' disease is a common name for one of the several illnesses caused by *Legionella* bacteria. Legionnaires' disease is an infection of the lungs that is a form of pneumonia. A person can develop Legionnaires' disease by inhaling water mist contaminated with *Legionella*.

*Legionella* bacteria are widely present at low levels in the environment: in lakes, streams, and ponds. At low levels the chance of getting Legionnaires' disease from a water source is very slight. The problem arises when high concentrations of the organism grow in water sources. Water heaters, cooling towers, and warm, stagnant water can provide ideal conditions for the growth of the organism.

Scientists have learned much about the disease and about the *Legionella* bacteria since it was first discovered in 1976. The following questions and answers will help you learn more of what is currently known about Legionnaires' disease.

1. What are the symptoms of Legionnaires' disease?
   * Early symptoms of the illness are much like the flu. After a short time (in some cases a day or two), more severe pneumonia-like symptoms may appear. Not all individuals with Legionnaires' disease experience the same symptoms. Some may have only flu-like symptoms, but to others the disease can be fatal.

Early flu-like symptoms:

* + slight fever
  + headache
  + aching joints and muscles
  + lack of energy, tired feeling
  + loss of appetite

Common pneumonia-like symptoms:

* + high fever (102° to 105°F, or 39° to 41°C)
  + cough (dry at first, later producing phlegm)
  + difficulty in breathing or shortness of breath
  + chills
  + chest pains

1. How common is Legionnaires' disease?
   * It is estimated that in the United States there are between 10,000 and 50,000 cases each year.
2. How does a person get Legionnaires' disease?
   * A person must be exposed to water contaminated with *Legionella* bacteria. This exposure may happen by inhaling or drinking water contaminated with the *Legionella* bacteria. For example, inhaling contaminated water mist from a cooling tower, a humidifier, or even a shower or sink can cause the disease.
3. How soon after being exposed will a person develop symptoms of the disease?
   * If infection occurs, disease symptoms usually appear within 2 to 10 days.
4. Are some people at a higher risk of developing Legionnaires' disease?
   * Yes, some people have lower resistance to disease and are more likely to develop Legionnaires' disease. Some of the factors that can increase the risk of getting the disease include:
     1. organ transplants (kidney, heart, etc.);
     2. age (older persons are more likely to get disease);
     3. heavy smoking;
     4. weakened immune system (cancer patients, HIV-infected individuals);
     5. underlying medical problem (respiratory disease, diabetes, cancer, renal dialysis, etc.);
     6. certain drug therapies (corticosteroids); and
     7. heavy consumption of alcoholic beverages.
5. Is Legionnaires' disease spread from person to person?
   * No. Legionnaires' disease is not contagious and cannot be transmitted from one person to another.
6. What causes Legionnaires disease?
   * Legionnaires' disease is caused by inhaling water contaminated with rod-shaped bacteria called *Legionella pneumophila.* There are over 30 different species of *Legionella,* many of which can cause disease. *Legionella pneumophila* is the most common species that causes disease.
7. Does everyone who inhales *Legionella* into the lungs develop Legionnaires' disease?
   * No. Most people have resistance to the disease. It is thought that fewer than 5 out of 100 persons exposed to water contaminated with *Legionella* will develop Legionnaires' disease.
8. Is Legionnaires' disease easy to diagnose?
   * No. The pneumonia caused by *Legionella* is not easy to distinguish from other forms of pneumonia. A number of diagnostic tests allow a physician to identify the disease. These tests can be performed on a sample of sputum, blood, or urine.
9. How is Legionnaires' disease treated?
   * Erythromycin is currently the antibiotic of choice. Early treatment reduces the severity and improves chances for recovery. In many instances this antibiotic may be prescribed without the physician's knowledge that the disease is Legionnaires' because erythromycin is effective in treating a number of types of pneumonia.
10. How did Legionnaires' disease get its name?
    * Legionnaires' disease got its name from the first outbreak in which the organism was identified as the cause. This outbreak occurred in 1976, in a Philadelphia hotel where the Pennsylvania American Legion was having a convention. Over 200 Legionnaires and visitors at this convention developed pneumonia, and some died. From lung tissue, a newly discovered bacterium was found to be the cause of the pneumonia and was named *Legionella pneumophila.*
11. Is Legionnaire's disease a new disease?
    * No, Legionnaires' disease is not new, but it has only recently been identified. Unsolved pneumonia outbreaks that occurred before 1976 are now known to have been Legionnaires' disease. Scientists are still studying this disease to learn more about it.
12. Are *Legionella* bacteria widespread in the environment?
    * Yes, studies have shown that these bacteria can be found in both natural and man-made water sources. Natural water sources including streams, rivers, freshwater ponds and lakes, and mud can contain the organism in low levels.
13. Could I get the disease from natural water sources?
    * It is unlikely. In the natural environment the very low levels of this organism in water sources probably cannot cause disease.
14. What water conditions are best for growth of the organism?
    * Warm, stagnant water provides ideal conditions for growth. At temperatures between 68° and 122°F the organism can multiply. Temperatures of 90°-105°F are ideal for growth. Rust (iron), scale, and other micro-organisms can also promote the growth of *Legionella.*
15. What common types of water are of greatest concern?
    * Water mist from cooling towers or evaporative condensers, evaporative coolers (swamp coolers), humidifiers, misters, showers, faucets, and whirlpool baths can be contaminated with the organism and if inhaled or swallowed can cause the disease.
16. Can Legionnaires' disease be prevented?
    * Yes. Avoiding water conditions that allow the organism to grow to high levels is the best means of prevention. Specific preventive steps include:
      1. Regularly maintain and clean cooling towers and evaporative condensers to prevent growth of *Legionella.* This should include twice-yearly cleaning and periodic use of chlorine or other effective biocide.
      2. Maintain domestic water heaters at 140°F (60°C). The temperature of the water should be 122°F or higher at the faucet.
      3. Avoid conditions that allow water to stagnate. Large water-storage tanks exposed to sunlight can produce warm conditions favorable to high levels of *Legionella*. Frequent flushing of unused water lines will help alleviate stagnation.
17. Do you recommend that I operate my home water heater at 140°F?
    * Probably not if you have small children or infirm elderly persons who could be at serious risk of being scalded by the hot water. However, if you have persons living with you who are at high risk of contracting the disease, then operating the water heater at a minimum temperature of 140F is probably a good idea.
18. What can be done if a water system is already contaminated or is suspected of being contaminated?
    * Special cleaning procedures can eliminate *Legionella* from water sources. In many cases these procedures involve the use of chlorine-producing chemicals or high water temperatures. Professional assistance should be sought before attempting to clean a water system.
19. Can my home water heater also be a source of *Legionella* contamination?
    * Yes, but evidence indicates that smaller water systems such as those used in homes are not as likely to be infected with *Legionella* as larger systems in work places and public buildings.
20. Can *Legionella* bacteria cause other diseases?
    * Yes. In addition to Legionnaires' disease, the same bacteria also cause a flu-like disease called Pontiac fever.
21. How does Pontiac fever differ from Legionnaires' disease?
    * Unlike Legionnaires disease, which can be a serious and deadly form of pneumonia, Pontiac fever produces flu-like symptoms that may include fever, headache, tiredness, loss of appetite, muscle and joint pain, chills, nausea, and a dry cough. Full recovery occurs in 2 to 5 days without antibiotics. No deaths have been reported from Pontiac fever.
22. Are there other differences between Legionnaires' disease and Pontiac fever?
    * Yes. Unlike Legionnaires' disease, which occurs in only a small percentage of persons who are exposed, Pontiac fever will occur in approximately 90% of those exposed. In addition, the time between exposure to the organism and appearance of the disease (called the incubation period) is generally shorter for Pontiac fever than for Legionnaires' disease. Symptoms of Pontiac fever can appear within one to three days after exposure.